

## **IN THE CLAIMS:**

1. (currently amended) A method for scanning for an object within a region, comprising:

scanning the region using a conformal scanning scheme, said scanning comprising:

determining a characteristic geometry of the region;

performing a conformal mapping between a ~~the~~ characteristic geometry of the region and a first scanning curve to generate a conformal scanning curve based on said characteristic geometry, wherein the first scanning curve is comprised in a first geometry, wherein the first geometry is different from the characteristic geometry of the region, wherein the first scanning curve comprises a sequence of points in the first geometry, and wherein said performing a conformal mapping between a characteristic geometry of the region and a first scanning curve comprises:

determining a mapping function which maps each point in the first geometry to a corresponding point in the characteristic geometry; and

applying the mapping function to each point in the sequence of points in the first geometry to generate a corresponding sequence of points in the characteristic geometry, wherein the sequence of points in the characteristic geometry comprises the conformal scanning curve; and

measuring the region at a plurality of points along the conformal scanning curve using one or more sensors;

determining one or more characteristics of the object in response to said scanning;  
and

generating output indicating the one or more characteristics of the object.

2-4. (cancelled)

5. (previously amended) The method of claim 1, wherein the first scanning curve minimizes one or more of angle deviations and curvature.

6. (previously amended) The method of claim 1, wherein the conformal curve has a maximum curvature below a specified curvature value.

7-8. (cancelled)

9. (previously amended) The method of claim 1,  
wherein said measuring the region at a plurality of points along the conformal scanning curve produces data;

wherein said determining one or more characteristics of the object in response to said scanning comprises examining said data.

10. (original) The method of claim 1,  
wherein said scanning the region using the conformal scanning scheme produces data indicative of the one or more characteristics of the object; and

wherein said determining one or more characteristics of the object in response to said scanning comprises examining said data.

11. (original) The method of claim 1, wherein the region has a dimensionality of one of one, two, and three.

12. (currently amended) A system for scanning for an object within a region, comprising:

a sensor; and

a computer which is operable to couple to said sensor, said computer comprising:

a CPU; and

a memory medium which is operable to store a scanning program;

wherein said CPU is operable to execute said scanning program to perform:

scanning the region with said sensor using a conformal scanning scheme,  
said scanning comprising:

determining a characteristic geometry of the region;

performing a conformal mapping between a ~~a~~the characteristic geometry of the region and a first scanning curve to generate a conformal scanning curve based on said characteristic geometry, wherein the first scanning curve is comprised in a first geometry, wherein the first geometry is different from the characteristic geometry of the region, wherein the first scanning curve comprises a sequence of points in the first geometry, and wherein said performing a conformal mapping between a characteristic geometry of the region and a first scanning curve comprises:

determining a mapping function which maps each point in the first geometry to a corresponding point in the characteristic geometry; and

applying the mapping function to each point in the sequence of points in the first geometry to generate a corresponding sequence of points in the characteristic geometry, wherein the sequence of points in the characteristic geometry comprises the conformal scanning curve; and

measuring the region at a plurality of points along the conformal scanning curve using one or more sensors;

determining one or more characteristics of the object in response to said scanning; and

generating output indicating the one or more characteristics of the object.

13-15. (cancelled)

16. (previously amended) The system of claim 12, wherein the first scanning curve minimizes angle deviations.

17. (previously amended) The system of claim 12, wherein the conformal curve has a maximum curvature below a specified curvature value.

18. (cancelled)

19. (previously amended) The system of claim 12,

wherein said measuring the region at a plurality of points along the conformal scanning curve produces data; and

wherein said determining one or more characteristics of the object in response to said scanning comprises examining said data.

20. (original) The system of claim 12,

wherein said scanning the region using the conformal scanning scheme produces data indicative of the one or more characteristics of the object; and

wherein said determining one or more characteristics of the object in response to said scanning comprises examining said data.

21. (original) The system of claim 12, wherein the region has a dimensionality of one of one, two, and three.

22. (original) The system of claim 12, wherein the region has a dimensionality greater than three.

23. (currently amended) A memory medium containing program instructions to scan for an object within a region, wherein said program instructions are executable to perform:

scanning the region using a conformal scanning scheme, said scanning comprising:

determining a characteristic geometry of the region;

performing a conformal mapping between ~~a~~the characteristic geometry of the region and a first scanning curve to generate a conformal scanning curve based on said characteristic geometry, wherein the first scanning curve is comprised in a first geometry, wherein the first geometry is different from the characteristic geometry of the region, wherein the first scanning curve comprises a sequence of points in the first geometry, and wherein said performing a conformal mapping between a characteristic geometry of the region and a first scanning curve comprises:

determining a mapping function which maps each point in the first geometry to a corresponding point in the characteristic geometry; and

applying the mapping function to each point in the sequence of points in the first geometry to generate a corresponding sequence of points in the characteristic geometry, wherein the sequence of points in the characteristic geometry comprises the conformal scanning curve; and

measuring the region at a plurality of points along the conformal scanning curve using one or more sensors;

determining one or more characteristics of the object in response to said scanning;  
and

generating output indicating the one or more characteristics of the object.

24-26. (cancelled)

27. (previously amended) The memory medium of claim 23, wherein the first scanning curve minimizes angle deviations.

28. (previously amended) The memory medium of claim 23, wherein the conformal curve has a maximum curvature below a specified curvature value.

29. (cancelled)

30. (previously amended) The memory medium of claim 23,  
wherein said measuring the region at a plurality of points along the conformal scanning curve produces data; and

wherein said determining one or more characteristics of the object in response to said scanning comprises examining said data.

31. (original) The memory medium of claim 23,  
wherein said scanning the region using the conformal scanning scheme produces data indicative of the one or more characteristics of the object; and

wherein said determining one or more characteristics of the object in response to said scanning comprises examining said data.

32. (original) The memory medium of claim 23, wherein the region has a dimensionality of one of one, two, and three.

33-35. (cancelled)

36. (previously added) A method for scanning for an object within a region, comprising:

scanning the region using a conformal scanning scheme, said scanning comprising:

performing a conformal mapping between a characteristic geometry of the region and a first scanning curve to generate a conformal scanning curve based on said characteristic geometry, wherein the first scanning curve minimizes one or more of angle deviations and curvature; and

measuring the region at a plurality of points along the conformal scanning curve;

determining one or more characteristics of the object in response to said scanning; and

generating output indicating the one or more characteristics of the object.

37. (previously added) A method for scanning for an object within a region, comprising:

scanning the region using a conformal scanning scheme, said scanning comprising:

performing a conformal mapping between a characteristic geometry of the region and a first scanning curve to generate a conformal scanning curve based on said characteristic geometry, wherein the conformal curve has a maximum curvature below a specified curvature value; and

measuring the region at a plurality of points along the conformal scanning curve;  
determining one or more characteristics of the object in response to said scanning;  
and  
generating output indicating the one or more characteristics of the object.

38-39. (cancelled)

40. (previously added) A memory medium containing program instructions to scan for an object within a region, wherein said program instructions are executable to perform:

scanning the region using a conformal scanning scheme, said scanning comprising:

performing a conformal mapping between a characteristic geometry of the region and a first scanning curve to generate a conformal scanning curve based on said characteristic geometry, wherein the first scanning curve minimizes one or more of angle deviations and curvature; and

measuring the region at a plurality of points along the conformal scanning curve;

determining one or more characteristics of the object in response to said scanning;  
and  
generating output indicating the one or more characteristics of the object.

41. (previously added) A memory medium containing program instructions to scan for an object within a region, wherein said program instructions are executable to perform:

scanning the region using a conformal scanning scheme, said scanning comprising:

performing a conformal mapping between a characteristic geometry of the region and a first scanning curve to generate a conformal scanning curve based on said

characteristic geometry, wherein the conformal curve has a maximum curvature below a specified curvature value; and

measuring the region at a plurality of points along the conformal scanning curve;

determining one or more characteristics of the object in response to said scanning;

and

generating output indicating the one or more characteristics of the object.

42-43. (cancelled)